

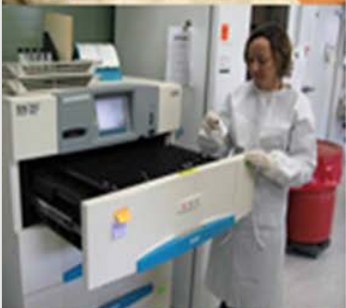
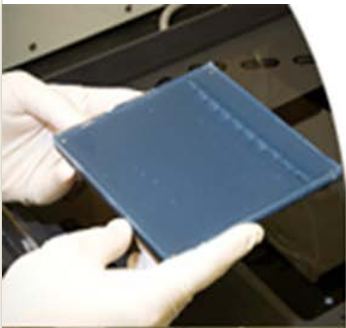


# **Interactive Training Webinar for Newborn Screening Specimen Collection**

**Patrice Held, PhD**

**Co-Director, Wisconsin Newborn Screening and Biochemical Genetics Laboratory**

**Assistant Professor, Dept of Pediatrics, University of Wisconsin-Madison**





# QI Project:

## *Reducing unsatisfactory specimen submission*

### **August 2014**

- Survey was sent to all NBS submitters to highlight concerns with specimen collection process

### **September 2014**

- Workgroup of DHS, NBS laboratory, Hospital representatives (5) met to review survey responses and identify/prioritize issues related to specimen collection

### **October 2014**

- The same workgroup of DHS, NBS laboratory, and Hospital representatives (5) met to brainstorm/identify/prioritize way to improve specimen collection

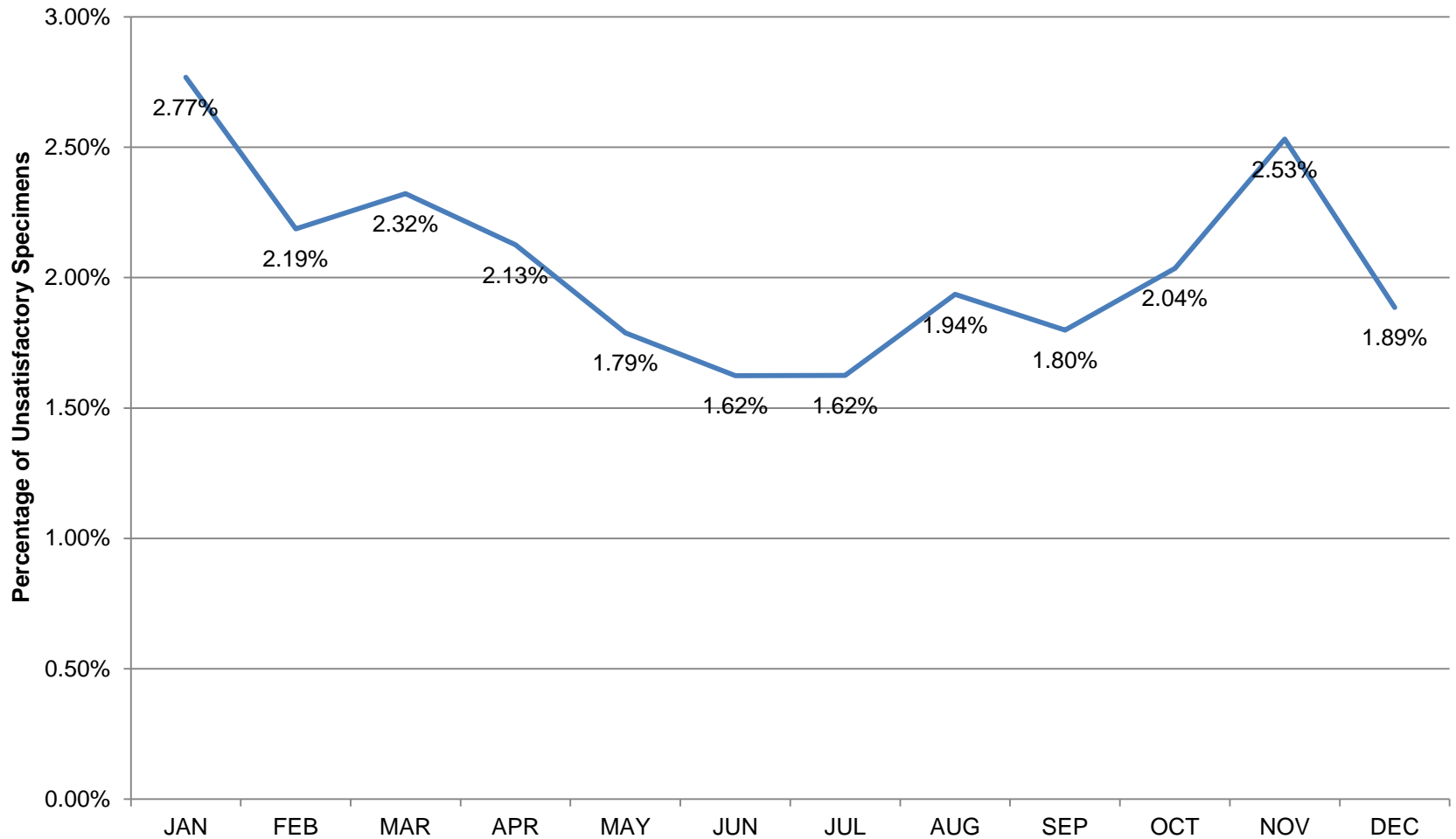
### **❖ Frequent issues identified by submitters**

- Lack of a consistent site-specific process
- Lack of instructional materials
- Lack of training
- No visual inspection before shipping specimens
- Using capillary tubes
- Blood Clotting within circles on the specimen card





# Unsatisfactory Specimen Collection



2014

Average:

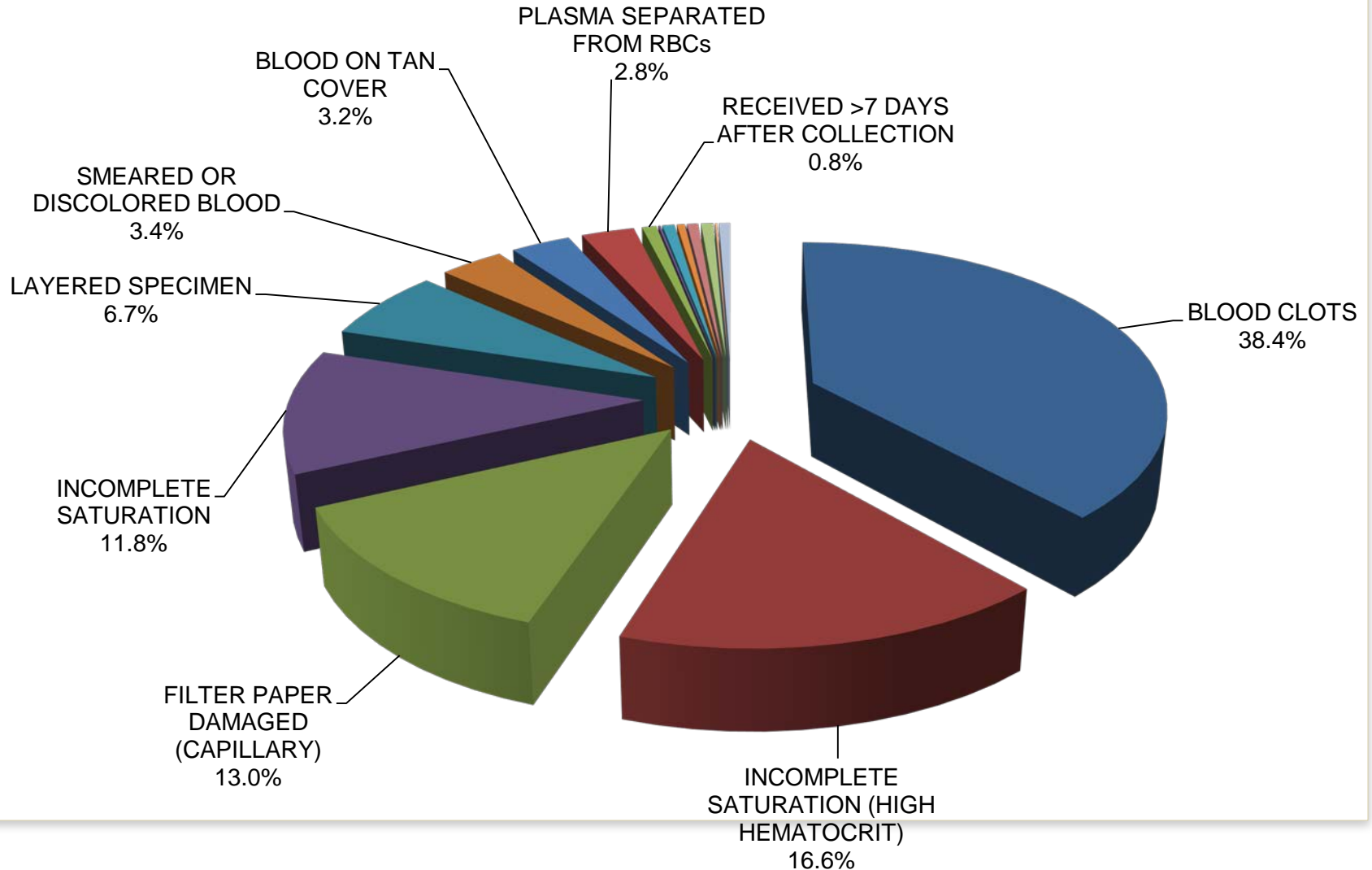
2013 = 2.6%

2014 = 2.0%

# Reasons for Unsatisfactory Specimens



2014





# Action Items

We were awarded federal funding through the Centers for Disease Control and Prevention to design a web-based training module for specimen collection

*This project was 100% funded with federal funds from a federal program of \$16,500. This project was supported by Cooperative Agreement #U60HM000803 funded by the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of CDC or the Department of Health and Human Services.*

*National Center for Immunization and Respiratory Diseases (IP)*

*Office of Surveillance, Epidemiology and Laboratory Services (OSELS)*

*National Center for HIV, Viral Hepatitis, STDs and TB Prevention (PS)*

*National Center for Zoonotic, Vector-borne, and Enteric Diseases (CK)*

*National Center for Environmental Health (NCEH)*

*Coordinating Office for Terrorism Preparedness and Emergency Response (CTPER)*



# Wisconsin Newborn Screening Program

[www.slh.wisc.edu/moodle](http://www.slh.wisc.edu/moodle)

*Released in April 2015*



Wisconsin State  
Laboratory of Hygiene  
UNIVERSITY OF WISCONSIN-MADISON



WISCONSIN DEPARTMENT  
of HEALTH SERVICES

**Basics on newborn screening  
specimen collection and submission**

*Helping babies get started on the  
right foot*

# Learning Objectives

Illustrate proper blood specimen collection

Outline the precise steps to take after blood collection

In the event of an unsatisfactory specimen, explain the necessary steps for specimen recollection

Describe quality assurance activities a submitter must utilize to ensure the collection process is performed correctly and consistently on all babies

# Webinar Format

The training covered in this webinar is specific to the process for blood collection and submission



This webinar is approximately 60 minutes long and includes:

Pre- and Post-tests

Family Story

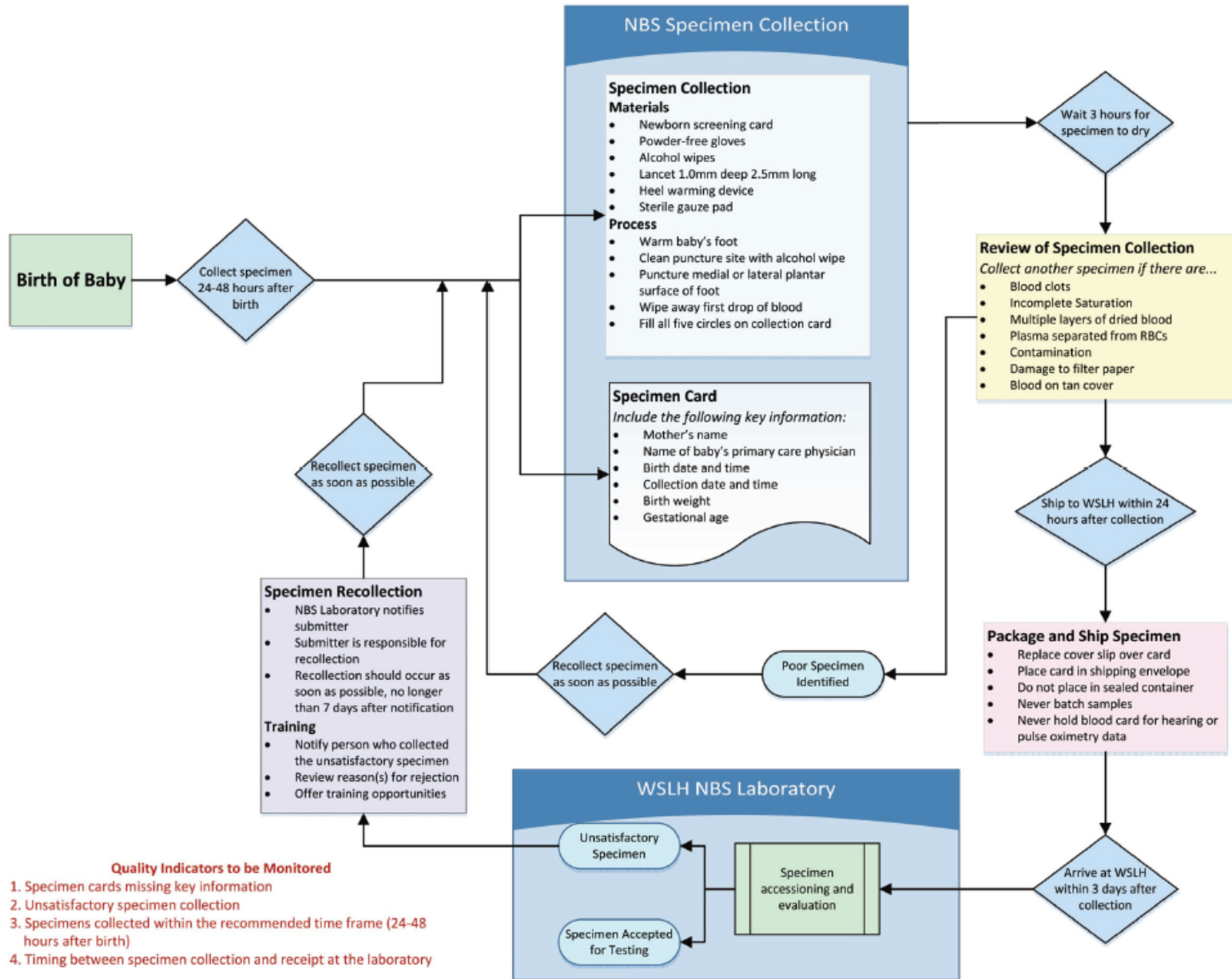
Training module

Webinar Evaluation

Available for PACE credit



# Newborn Screening Specimen Collection Workflow


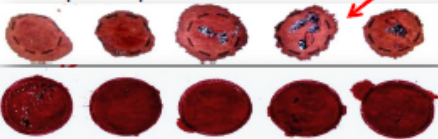

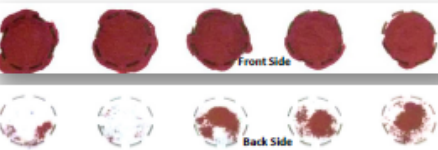

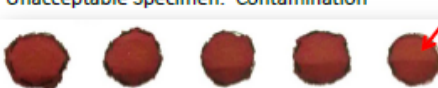
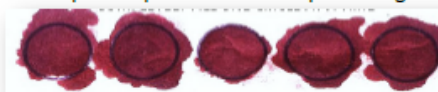
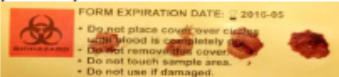


**Quality Indicators to be Monitored**

1. Specimen cards missing key information
2. Unsatisfactory specimen collection
3. Specimens collected within the recommended time frame (24-48 hours after birth)
4. Timing between specimen collection and receipt at the laboratory

# Unsatisfactory Specimen Identification Guide

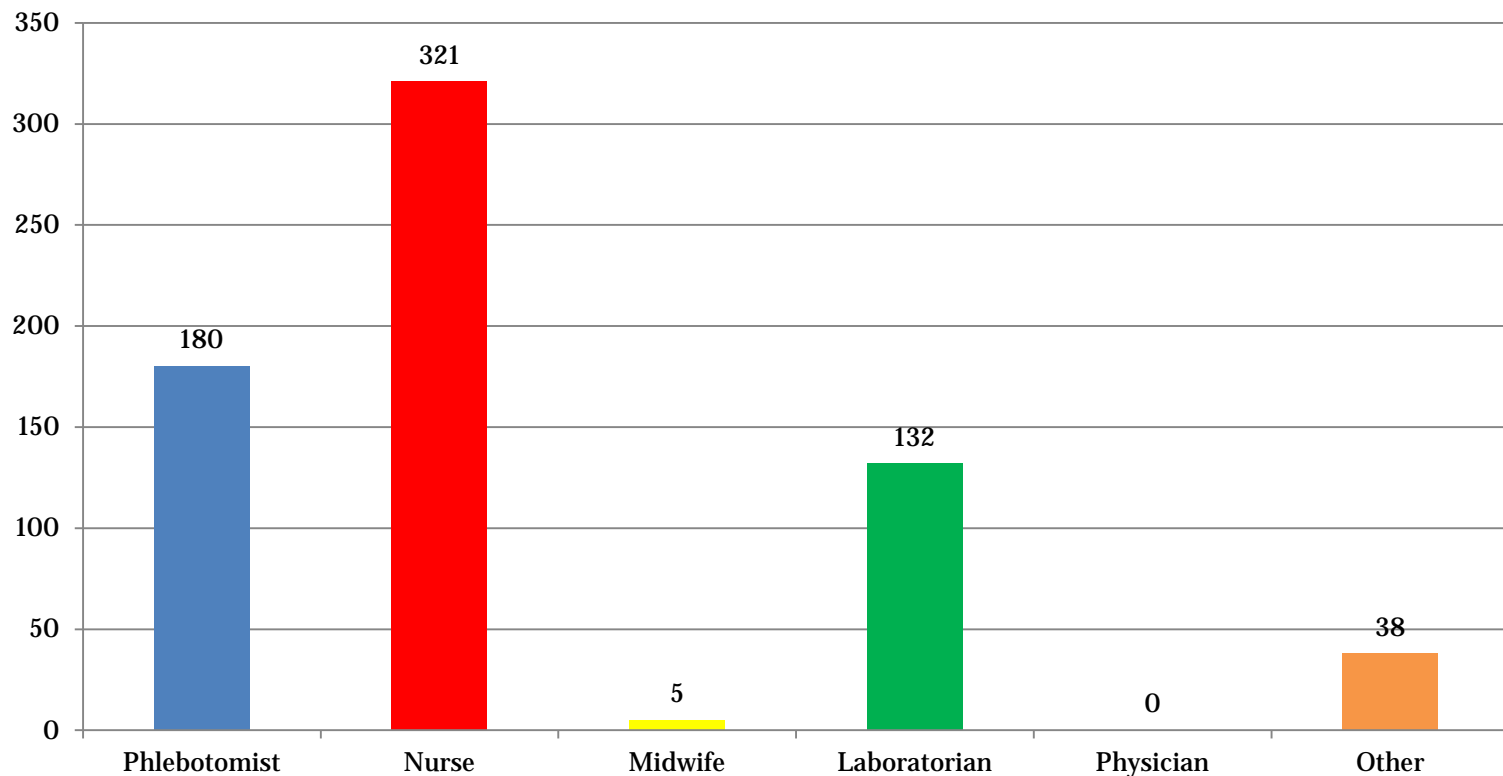
## Newborn Screening

	<p>Example of an Acceptable Specimen</p>
<p>Unacceptable Specimen: Blood Clots</p> 	<p><u>Can be avoided by:</u></p> <ul style="list-style-type: none"> <li>• Rapidly applying the drop of blood onto the card</li> <li>• Never touching the same circle multiple times with blood</li> </ul>
<p>Unacceptable Specimen: Layered Blood</p> 	<p><u>Can be avoided by:</u></p> <ul style="list-style-type: none"> <li>• Never touching the same circle multiple times with blood</li> </ul>
<p>Unacceptable Specimen: Incomplete Saturation</p> 	<p><u>Can be avoided by:</u></p> <ul style="list-style-type: none"> <li>• Always examining both sides of the card</li> <li>• Making sure the blood soaks through the entire circle</li> <li>• Making sure the baby is well hydrated prior to specimen collection</li> </ul>
<p>Unacceptable Specimen: Plasma Separated from RBCs</p> 	<p><u>Can be avoided by:</u></p> <ul style="list-style-type: none"> <li>• Rapidly applying the drop of blood onto the card</li> <li>• Making sure the puncture site is dry after wiping with alcohol</li> <li>• Not excessively squeezing the puncture site to obtain the blood</li> <li>• Not using a capillary tube</li> </ul>
<p>Unacceptable Specimen: Contamination</p> 	<p><u>Can be avoided by:</u></p> <ul style="list-style-type: none"> <li>• Never allowing the filter paper to come in contact with ungloved hands or substances such as alcohol, formula, antiseptic solution, water, lotion or powder either before or after collection</li> </ul>
<p>Unacceptable Specimen: Filter Paper Damage</p> 	<p><u>Can be avoided by:</u></p> <ul style="list-style-type: none"> <li>• Never bending the filter paper card during collection</li> <li>• Never "coloring-in" or repeatedly "dabbing" the filter paper circle with a capillary tube</li> </ul>
<p>Unacceptable Specimen: Blood on Tan Cover</p>  <p>FORM EXPIRATION DATE: 12/31/15-05</p> <ul style="list-style-type: none"> <li>• Do not place cover over sample until blood is completely dry</li> <li>• Do not remove the cover</li> <li>• Do not touch sample area</li> <li>• Do not use if damaged</li> </ul>	<p><u>Can be avoided by:</u></p> <ul style="list-style-type: none"> <li>• Always inspecting card prior to shipment</li> <li>• Allowing sufficient drying time before packaging card for shipment</li> </ul>



# Demographic Information

**Which of the following best describes your job/title?**

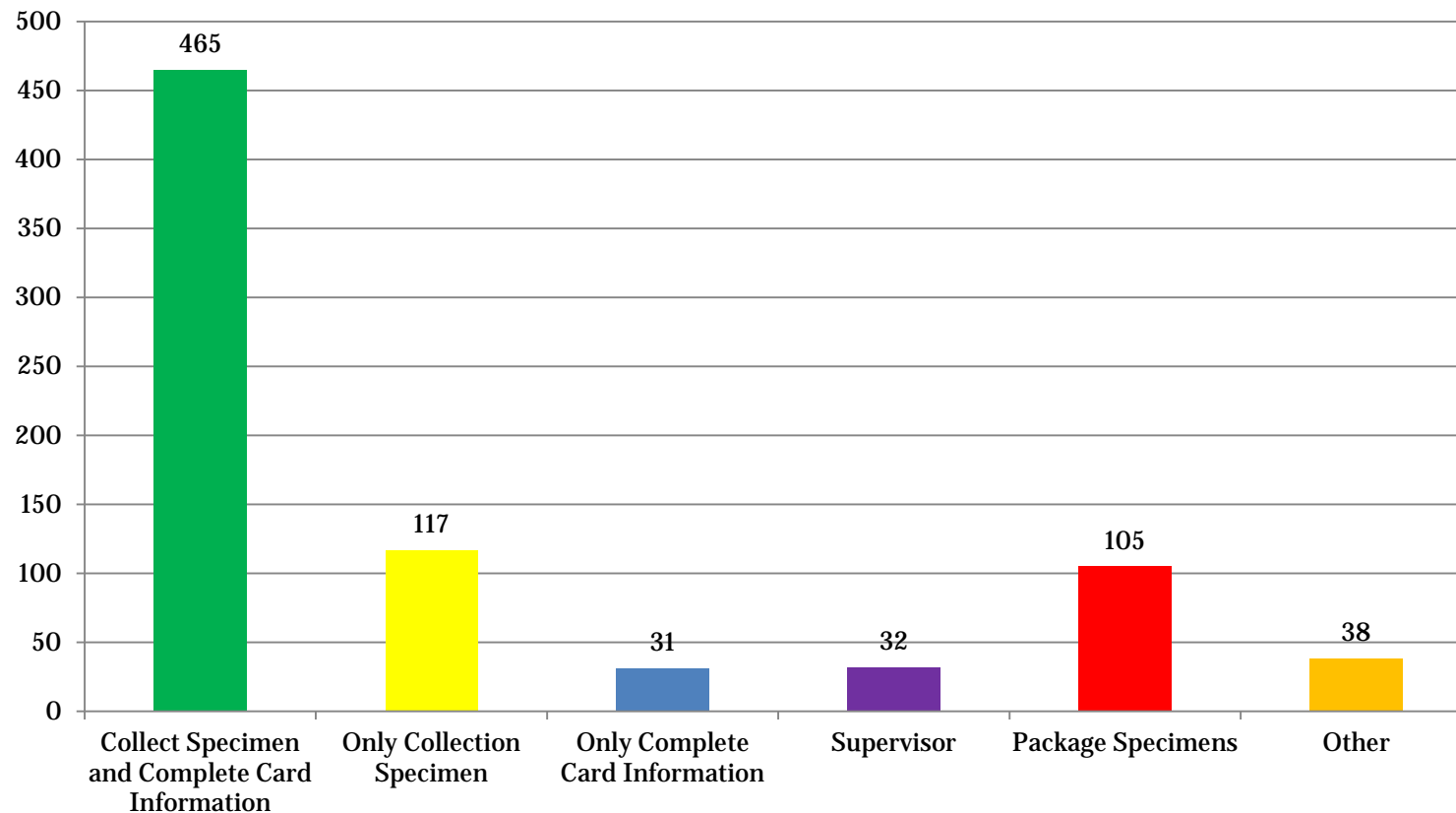


**N=676, 9 months after release**

# Demographic Information



## What is your role in the NBS specimen collection process?

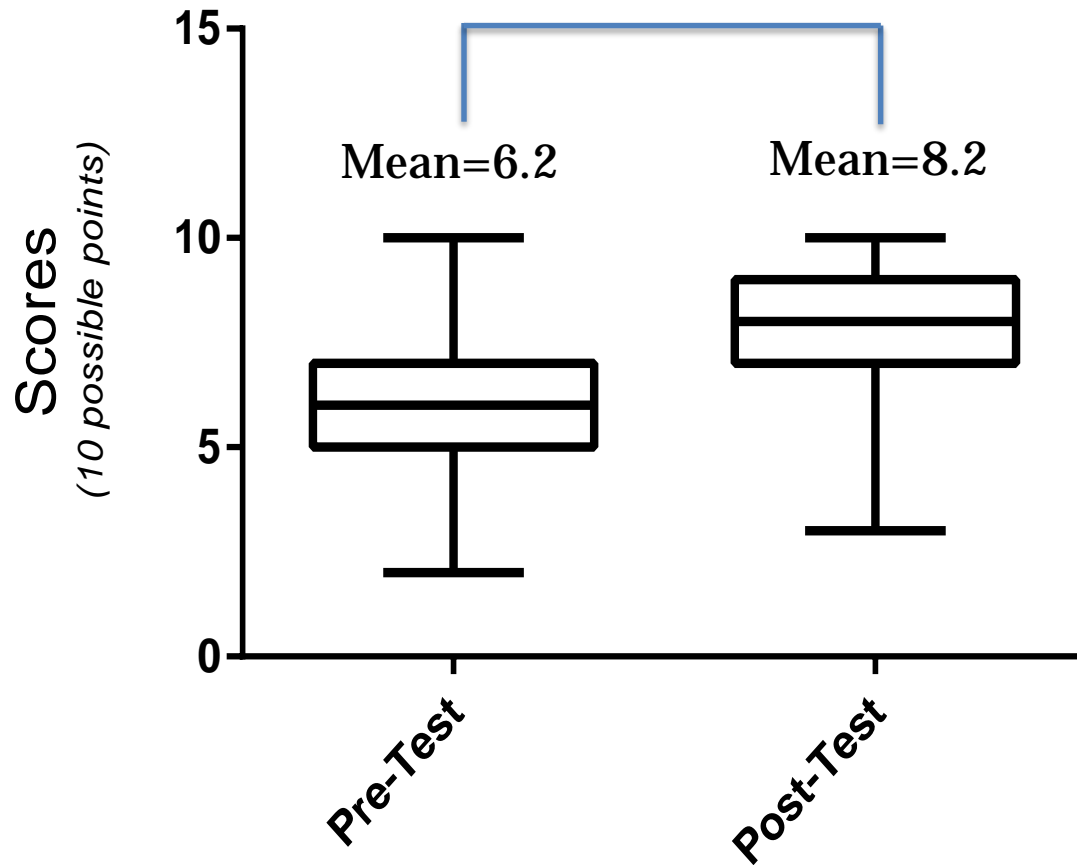


N=676, 9 months after release



# Overall Quiz Results

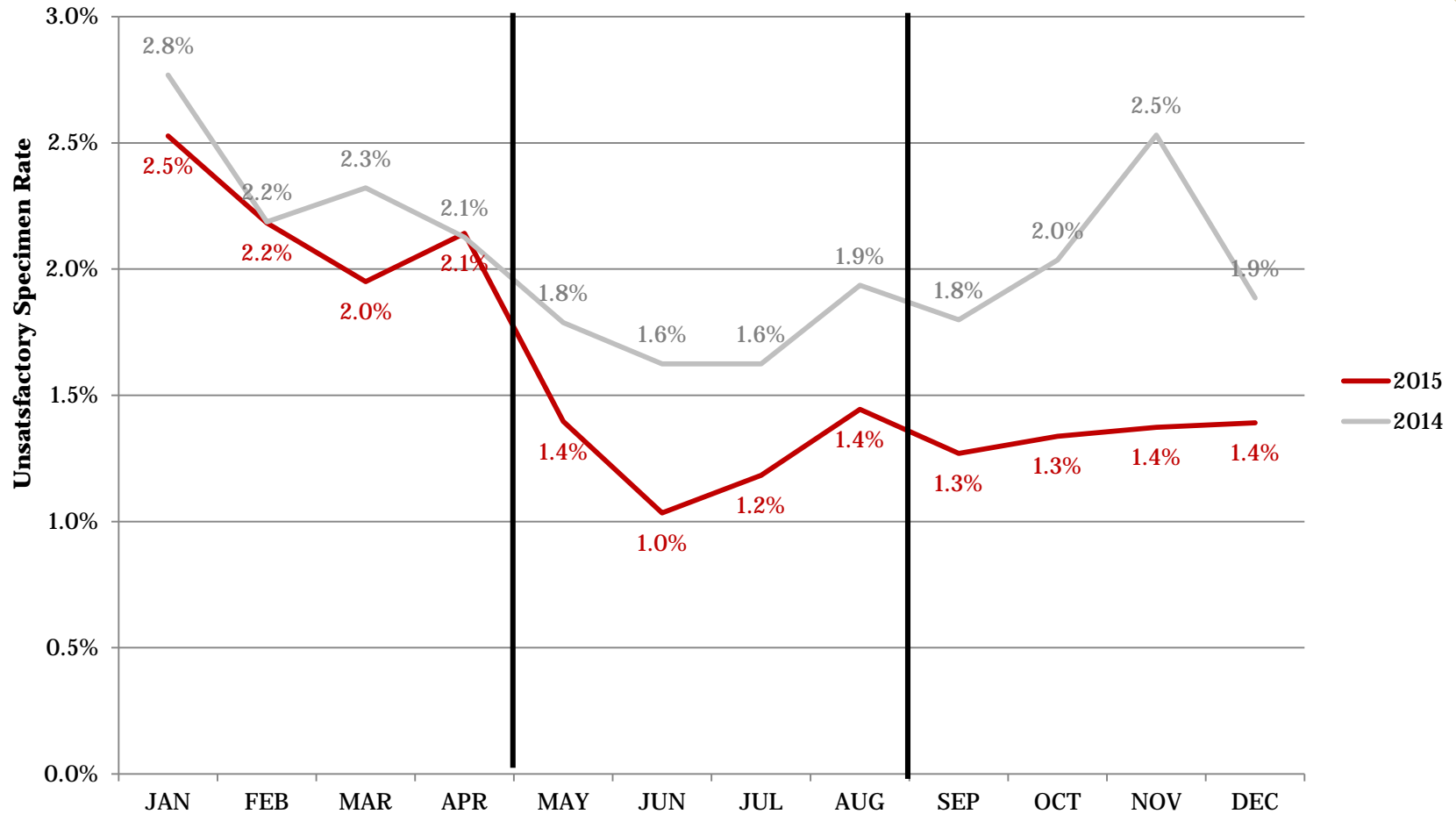
P value <0.0001



*The whiskers represent the min and max value scored by any one learner. The box represents the 25<sup>th</sup> and 75<sup>th</sup> percentile.*

N=676, 9 months after release

# Unsatisfactory Specimen Collection



April 20, 2015 distribution of webinar  
August 15, 2015 distribution of posters

Average:

2013 = 2.6%  
2014 = 2.0%  
2015 = 1.6%



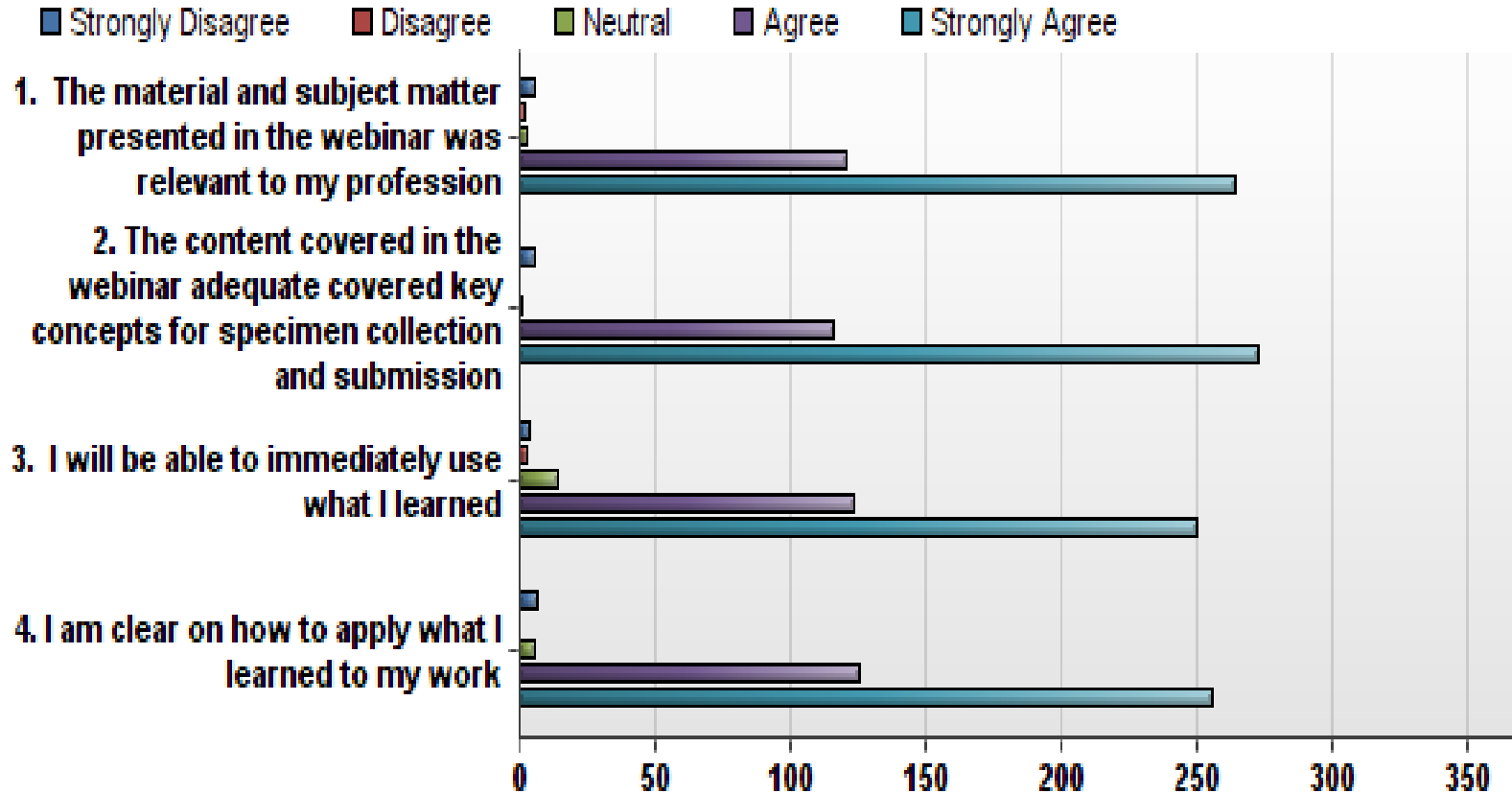
# PACE Credit continuing education

During the 9 month period from release of the webinar, 409 out of 676 total learners (60.5%) obtained PACE credit after viewing the webinar.



# Evaluation

*relevance of material*



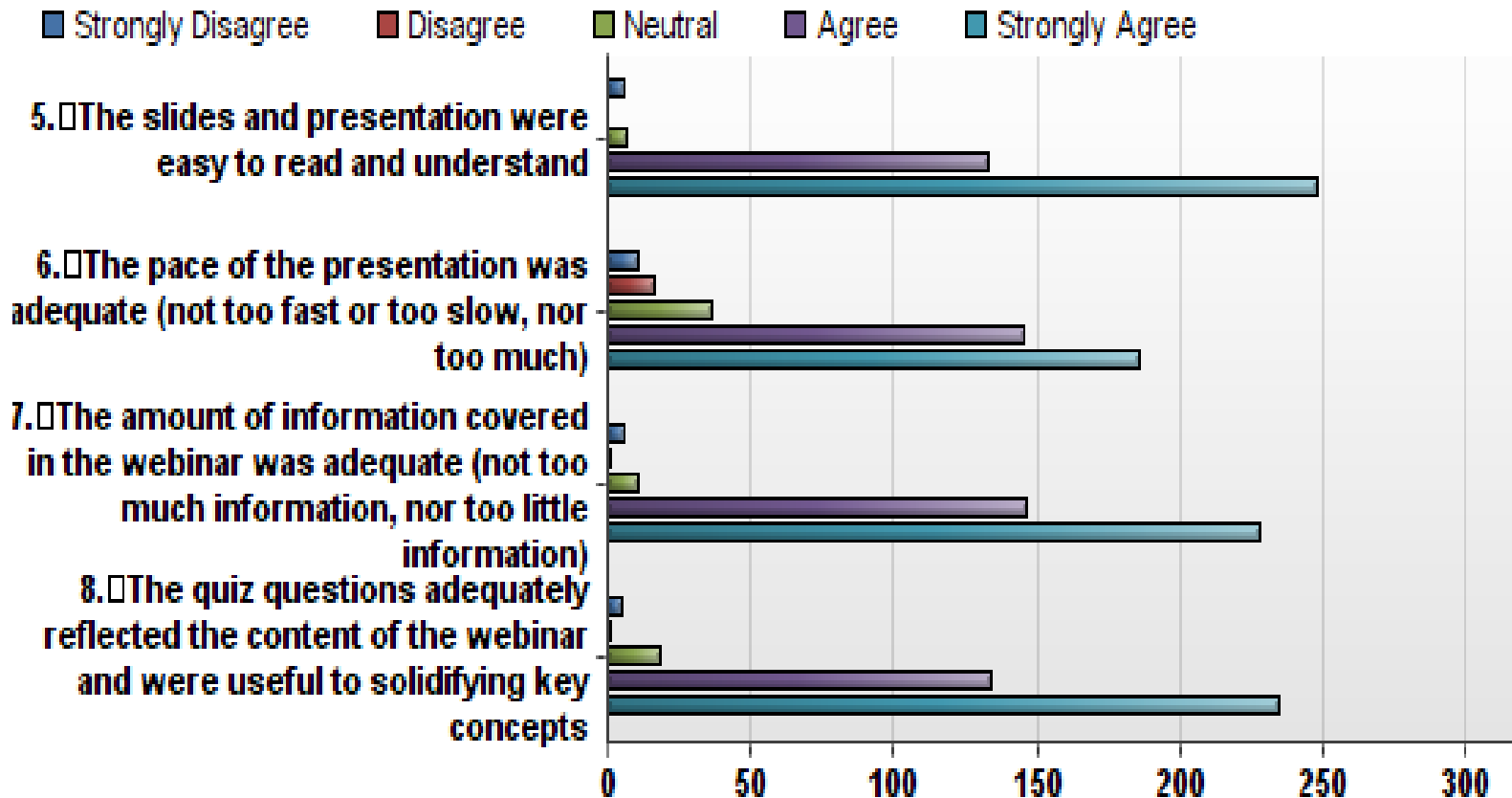
396 total respondents to survey





# Evaluation

## *Delivery of Content*

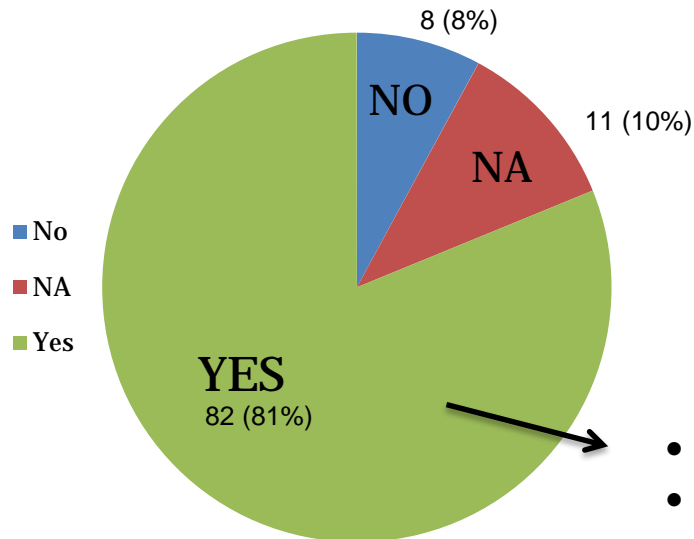


396 total respondents to survey



# Evaluation

*Do you intend to use this webinar for training?*



*“This link has been forwarded to all laboratory staff involved with the collection process and will be the subject of discussion at the next laboratory staff meeting.”*

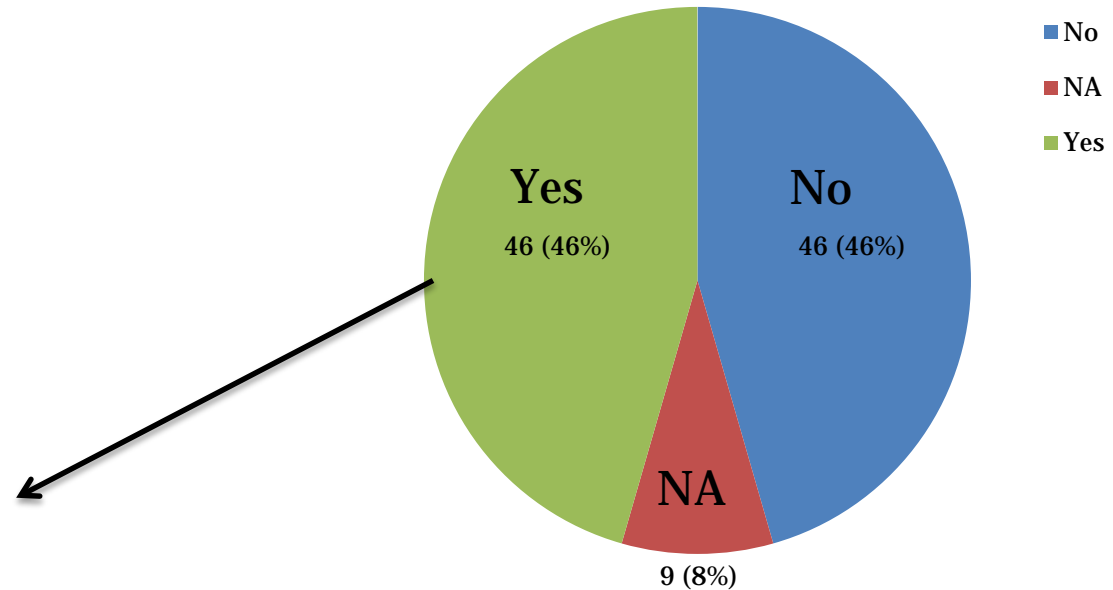
- 58% are already using webinar for staff training
- 8% indicated that they will use it for yearly competency assessments

*“This is the second facility I have worked in within the state of Wisconsin in 22 years. This is the first time I have actually been trained. Most information I learned by fellow workers training me but some information I was taught was incorrect. Thank you.”*



# Evaluation

*Do you have any suggestions for future versions of this webinar?*



52% pace was too slow

21% would prefer video (not slides) of collection

14% would like to see other webinars

- Specimen collection in premature infants
- Hearing Screening
- Heart Screening

7% requested more personal stories



# Next Steps

- ❑ Consider creation of additional training webinars
  - ✓ Webinar on collection requirements for premature, low birth weight, sick newborns
    - Release on March 1, 2016
  - ❑ Webinar on hearing screening
  - ❑ Webinar on heart screening
- ✓ Develop learning management system to house training webinars
  - Release on March 1<sup>st</sup>, 2016



[www.slh.wisc.edu/moodle](http://www.slh.wisc.edu/moodle)



# Things I have come to learn...

There's no such thing as perfect or complete...only continuous improvement.





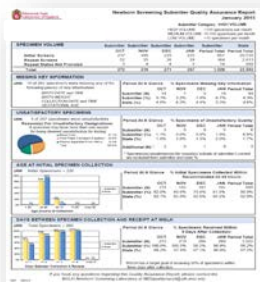
# Acknowledgements

- ❖ Lisa Burley, Burley Consulting
- ❖ Brain Ploeckelman, DoIT, UW-Madison
  - ❖ Jan Klawitter, WSLH
  - ❖ Dr. Mei Baker, WSLH
- ❖ Dr. Charles Brokopp, WSLH



***Helping babies get started on the right foot***

# Timeline of Wisconsin's Quality Improvement Projects



Jan 2014

Nov 2013



Jul 2014

Mar 2014



Aug 2014

Sep 2014



Mar 2015



**Wisconsin Newborn Screening Program**

Basics on newborn screening specimen collection and submission  
*Helping babies get started on the right foot*

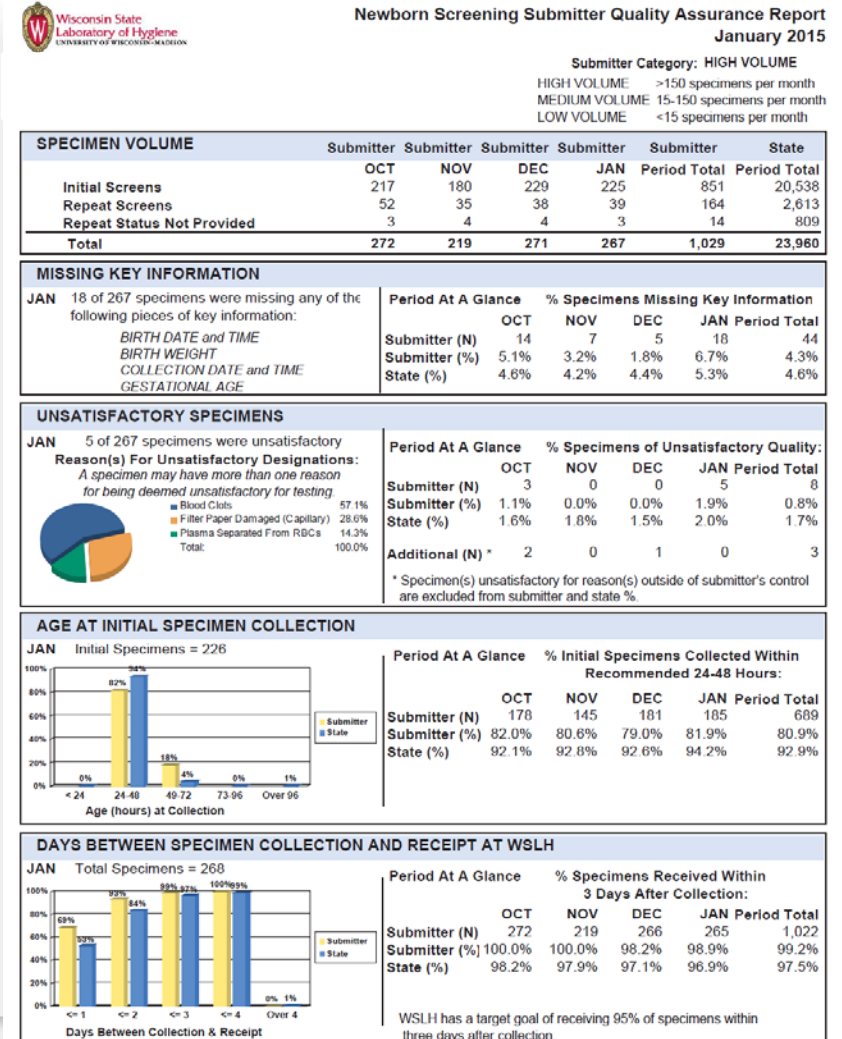
Apr 2015





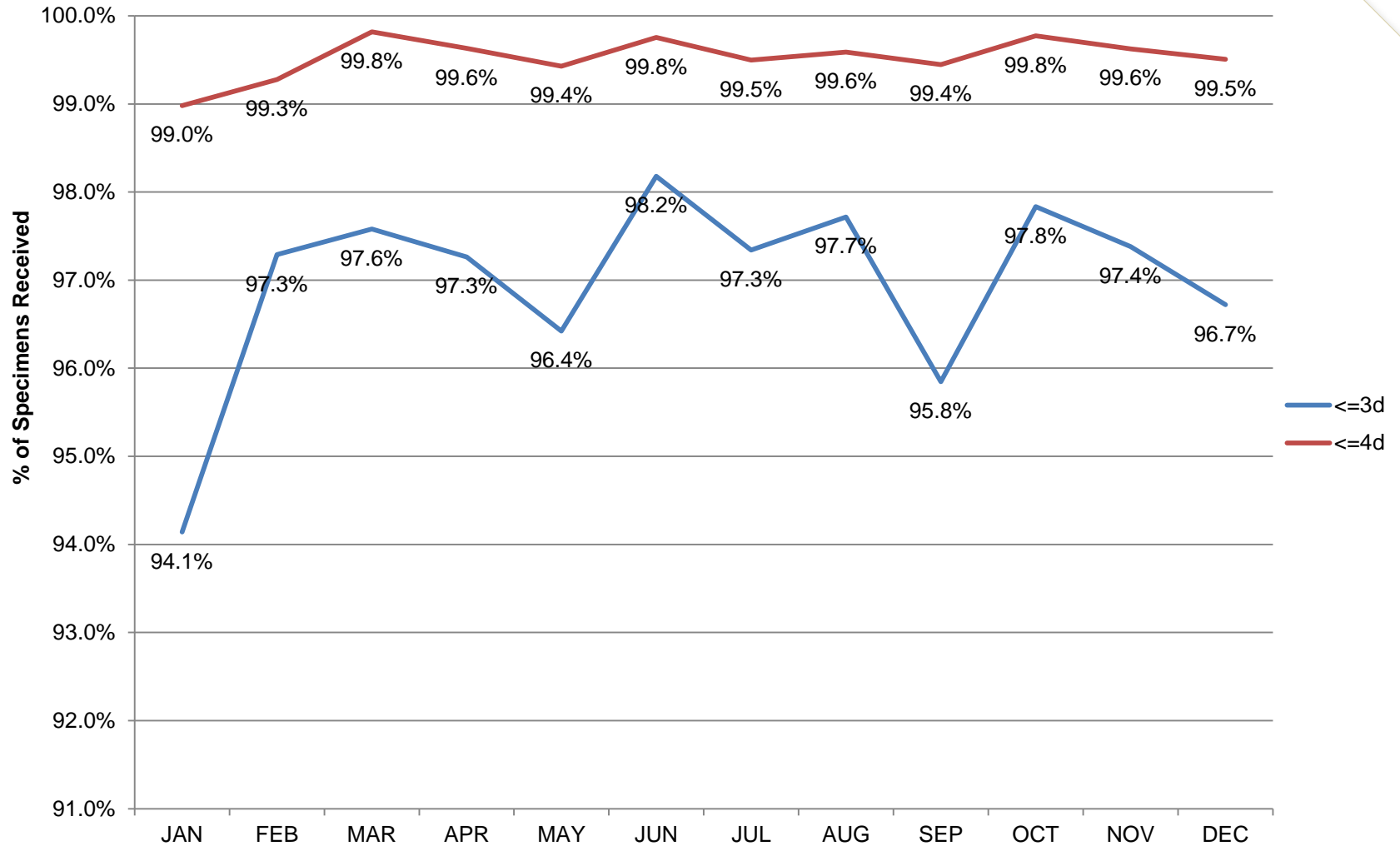
# Wisconsin Quality Assurance: Monthly Submitter Report

- Specimens missing key information
- Unsatisfactory Specimens
- Timing of Specimen Collection
- Timing between specimen collection and receipt at the laboratory





# Transit Time: Collection to Receipt



Average:

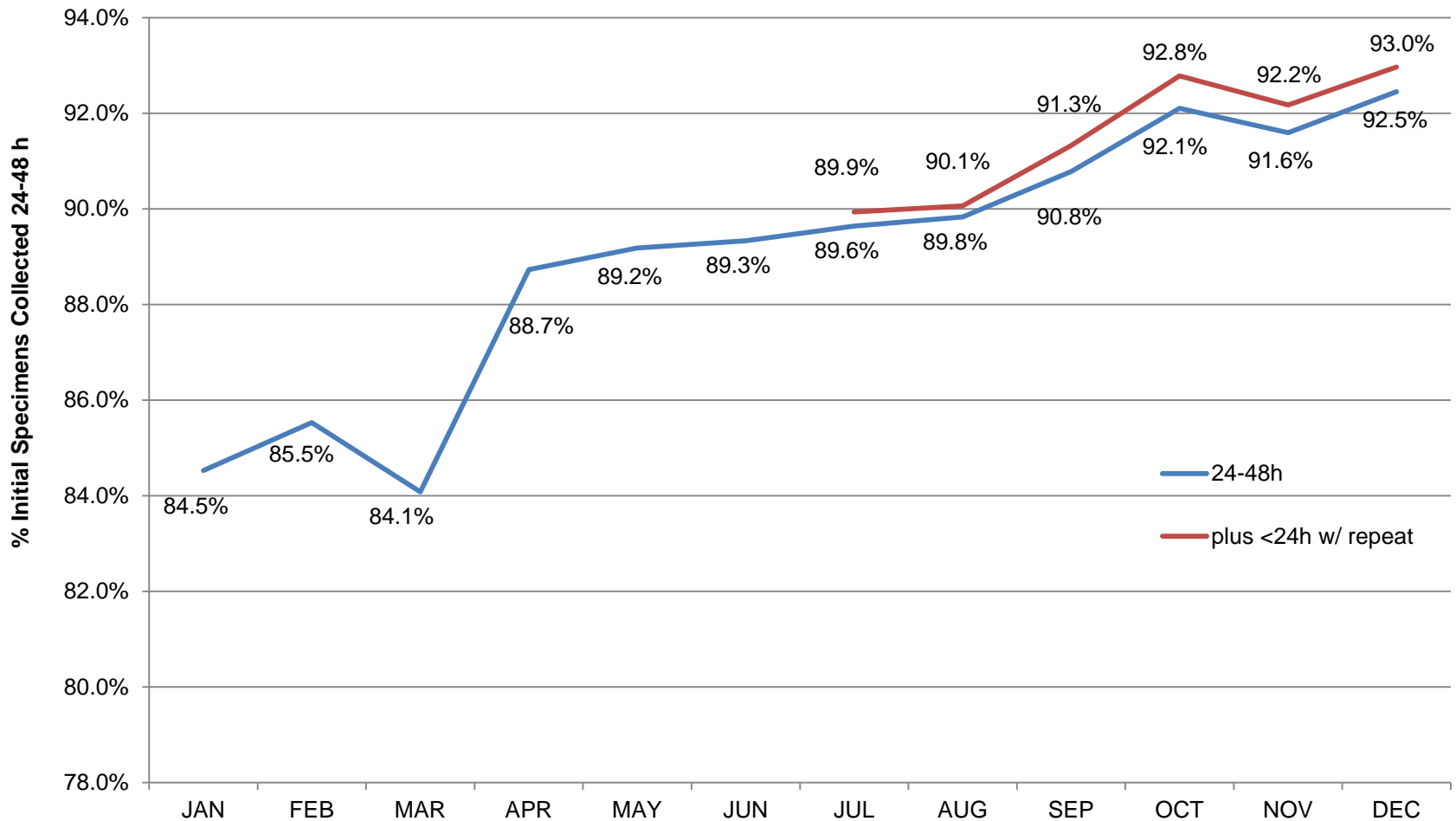
2013 (<=3d) = 87.1%  
2013 (<=4d) = 96.9%

2014 (<=3d) = 97.0%  
2014 (<=4d) = 99.5%

2014



# Specimen Collection (24-48 hours)



Average:

2013 (24-48h) = 83.2%

2014 (24-48h) = 89.0%

2014

# Newborn Screening Program in Wisconsin



Screening  
for Hearing  
loss



Screening for 44  
different  
conditions  
through a dried  
blood spot



Screening for  
Critical  
Congenital Heart  
Disease

# Importance of Timing: *The Thompson Family*



# Testing Baseline Knowledge





# Quiz Question #1

Order the following list of events within the specimen collection process.

- a. Elevated the baby's heart above the legs and warm the foot with a heating device
- b. Clean the selected puncture site with an alcohol wipe
- c. Puncture the skin
- d. Wipe away the first drop of blood
- e. Gently allow droplet of blood to saturate the filter paper specimen



## Quiz Question #2

Indicate the ideal location for puncture site on the baby's foot:







## Quiz Question #3

How large of an incision should the lancet make in on the heel of a full term infant?

- a. 1.0 mm deep by 2.5 mm long
- b. 0.85 mm deep by 1.75 mm long
- c. 1.5 mm deep by 2.0 mm long
- d. 2.5 mm deep by 2.5 mm long
- e. None of the above



## Quiz Question #4

Which of the following pieces of information is NOT critical for reporting of the newborn screening results:


- a. Birth weight
- b. Birth date and time
- c. Collection date and time
- d. NICU status
- e. Mother's name
- f. Physicians name and contact information
- g. Gestational age



# Quiz Question #5

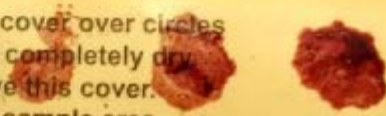
Which of the pictures below represent the most common reason for unsatisfactory specimens?



 **BIOHAZARD**

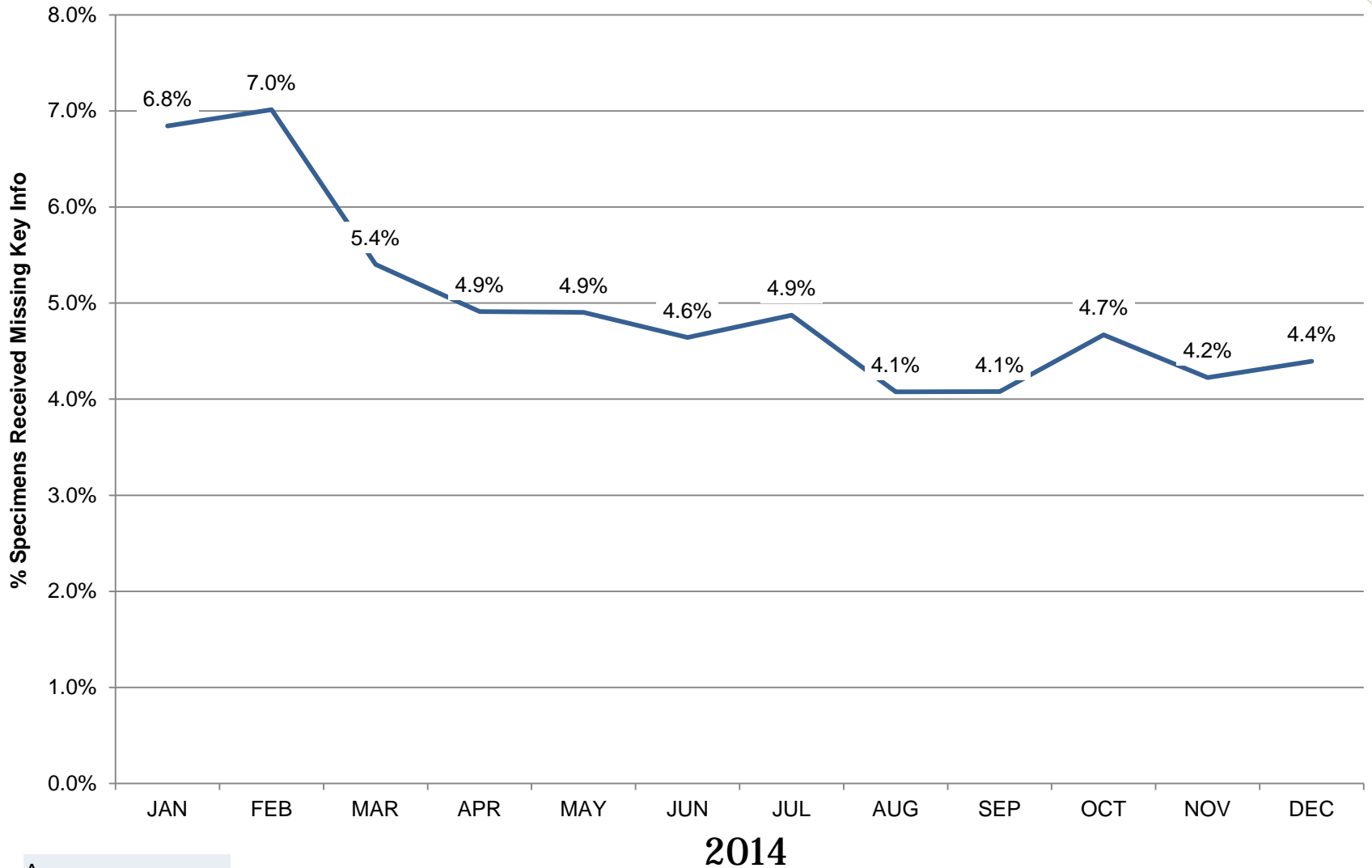
FORM EXPIRATION DATE: 2016-05

- Do not place cover over circles until blood is completely dry.
- Do not remove this cover.
- Do not touch sample area.
- Do not use if damaged.





# Missing Key Information\*

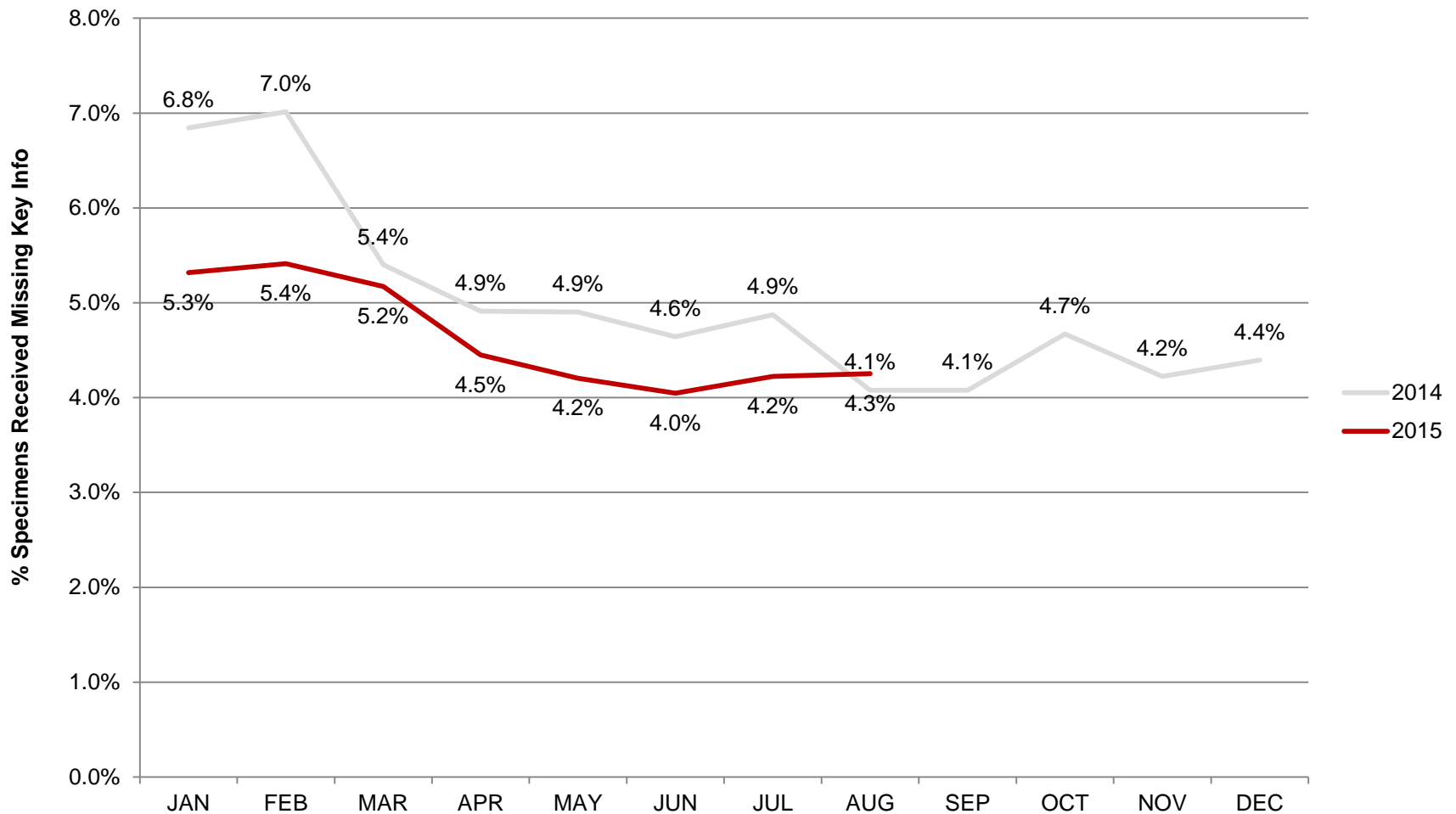


Average:  
2014 = 5.0%

*\*birth weight, birth date and time, collection date and time, gestational age*



# Missing Key Information\*

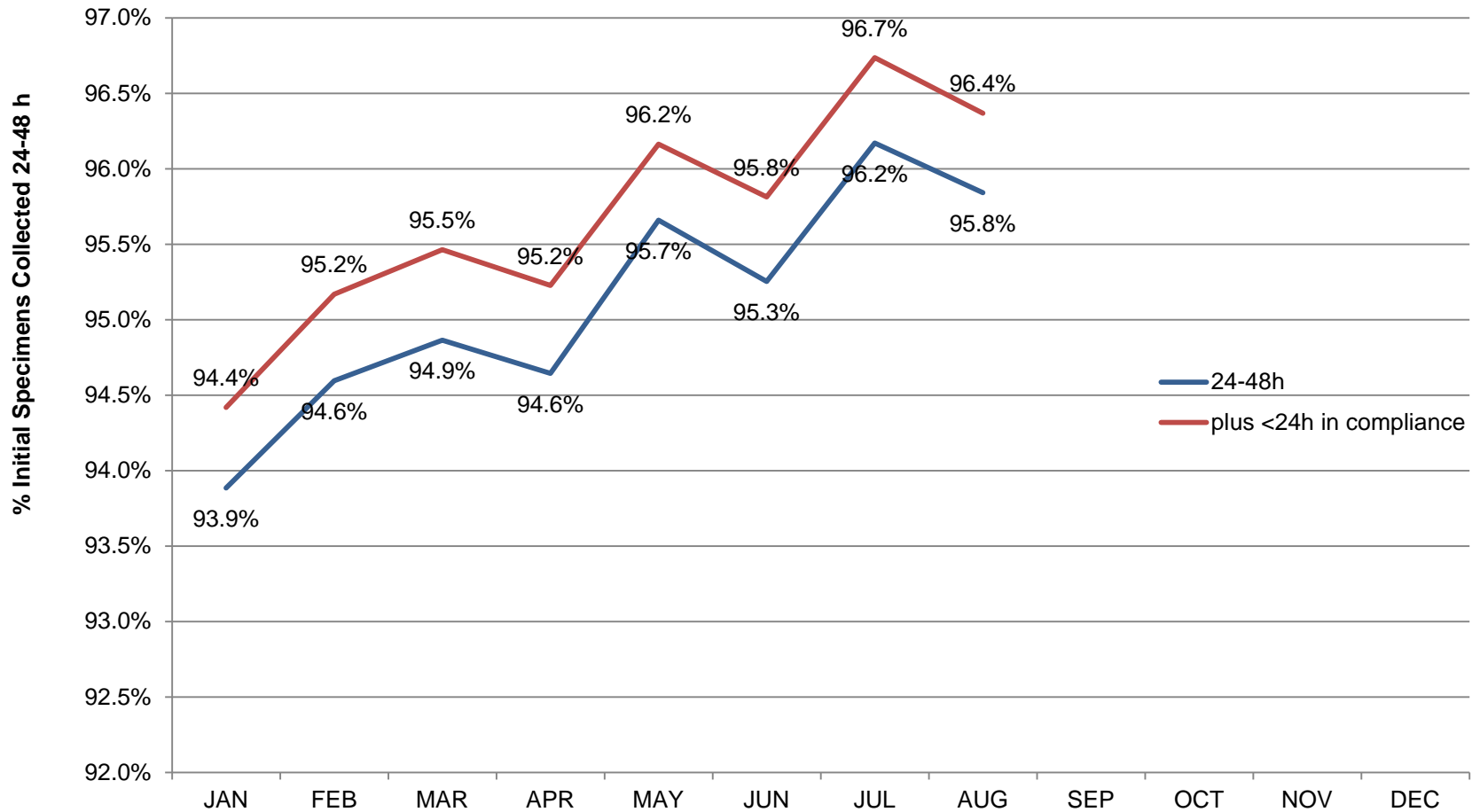


Average:
2014 = 5.0%
2015 = 4.6%

*\*birth weight, birth date and time, collection date and time, gestational age*



# Specimen Collection (24-48 hours)

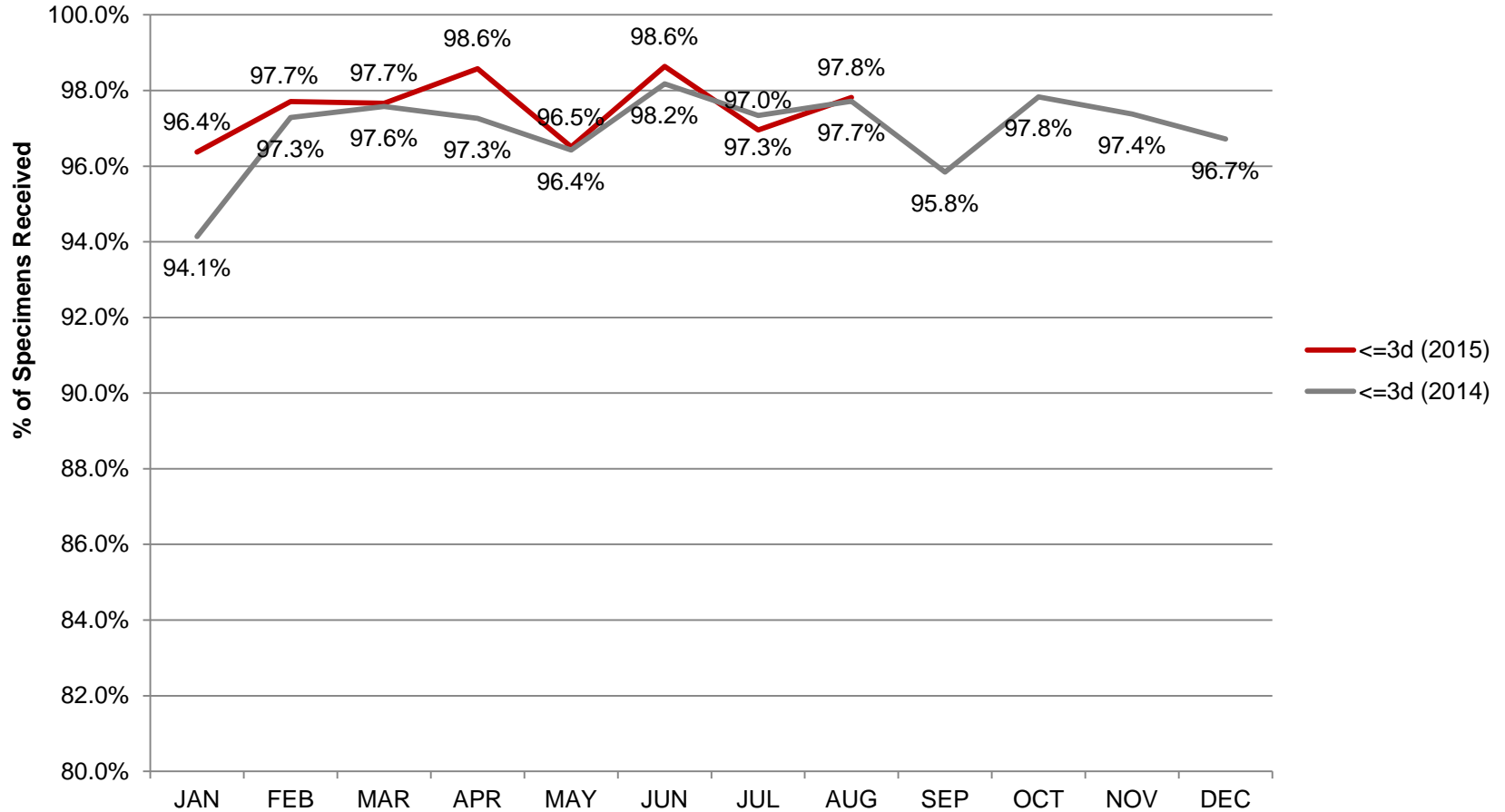


Average:	
2013 (24-48h)	= 83.2%
2014 (24-48h)	= 89.0%
2105 (24-48h)	= 95.1%

2015



# Transit Time: Collection to Receipt Within 3 days



Average:	2013	2014	2015
<=3d	87.1%	97.0%	97.5%
<=4d	96.9%	99.5%	99.6%